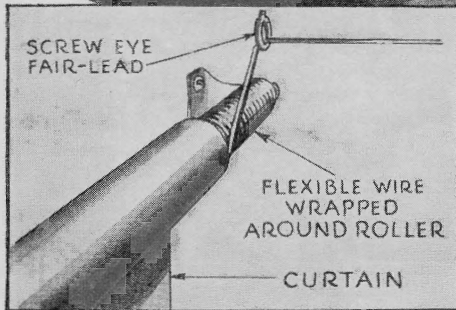
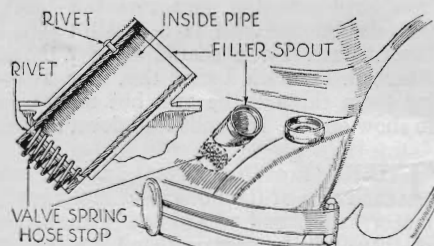


Valuable Kinks for Your Car



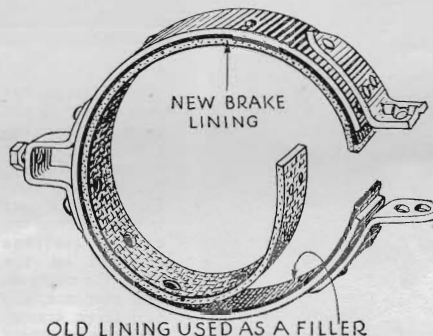
Wire, attached to car's rear window curtain roller, passes through screw eyes to driver's seat and is a means of adjusting the curtain

BY MEANS of the simple rigging shown above, the curtain at the rear window of a sedan can be adjusted to any desired position from the driver's seat. A pliable wire, wound around one end of the curtain roller and guided by means of screw eyes to the driver's seat, forms the handy control. Sufficient wire should be wound on the roller to provide some spare even when the curtain is lowered to its fullest extent. This arrangement is particularly handy when you are driving alone, since the rear curtain can be lowered by simply pulling the wire. To raise the curtain, it is necessary to give the wire a jerk and thus release the spring in the roller. Those who drive at night will appreciate the convenience of being able to adjust the curtain when headlights from behind blind one.—W.I.



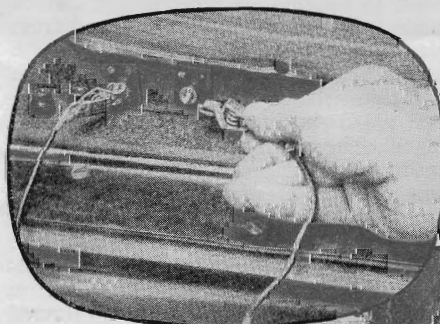
Guarding Gasoline

GASOLINE stealing, the latest racket of petty thieves, has led many car owners to install locking caps on their gasoline tank filler spouts. A simpler method of protecting your gasoline is shown in the sketch above. A piece of valve spring is fastened inside a short length of pipe which in turn is fastened inside the gasoline tank filler pipe. The spring, held in place with a long rivet fashioned from a nail, will not interfere with the nozzle of the regular pump hose but will not allow a syphon tube or suction hose to be lowered to the surface of the gasoline.—J.W.A.



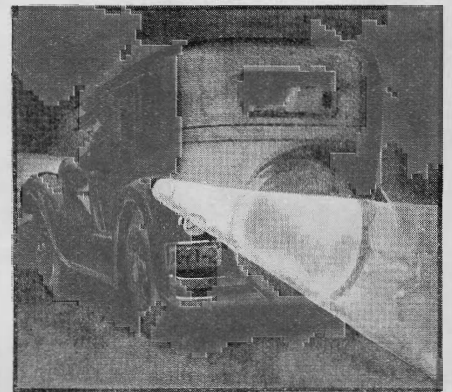
Double Brake Lining

ON OLD cars, badly worn brake drums sometimes make it impossible to adjust the brakes so they will hold even when the linings are relatively new. This can be remedied by placing the old lining under the new as a filler. When applying a new lining, remove the old, place it under the new, and rivet them both in place with the new one on top. The double thickness makes up for the worn drums and allows you to get the full wear out of new linings. This can be used on internal, as well as external brakes.—S.Z.

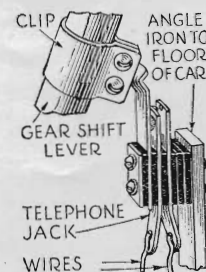


Binding posts set in front seat support, as shown at right, simplify problem of charging the battery. Lead wires from charger are clipped to terminals as seen above while charger is on running board

Old Brake Lining Used as Filler to Take Up Slack in Worn Brake Drums—Handy Light for Night Parking



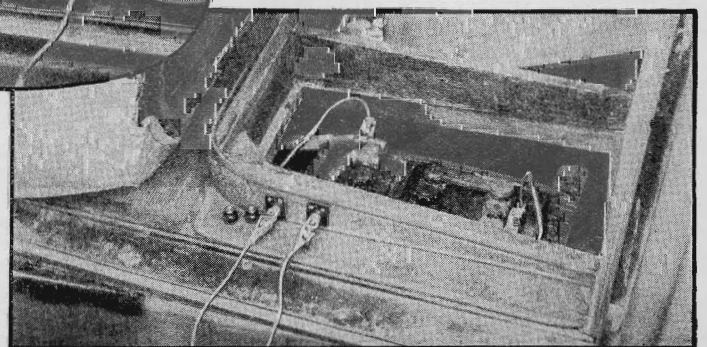
A Parking Light



FOR the driver who does a lot of parking at night, the easily-constructed automatic backing light illustrated above and at left is good insurance against scraped and dented fenders. The switch, operated by the gear lever, is an ordinary telephone jack with its casing removed. It is supported on an angle iron placed in front of the reverse position of the gear shift. An extension arm clamped to the shift rod closes the two contacts on the jack when the gears are put in reverse.—E.P.

Charging Battery

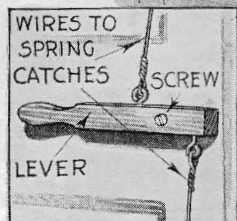
TWO binding posts, installed on the front seat support, simplify the problem of charging the car battery in the home garage. The charger is placed on the running board and the lead wires are clipped to the terminals. The binding posts shown in the illustration were taken from an old radio set. The inner leads are clipped to the battery.—K.M.



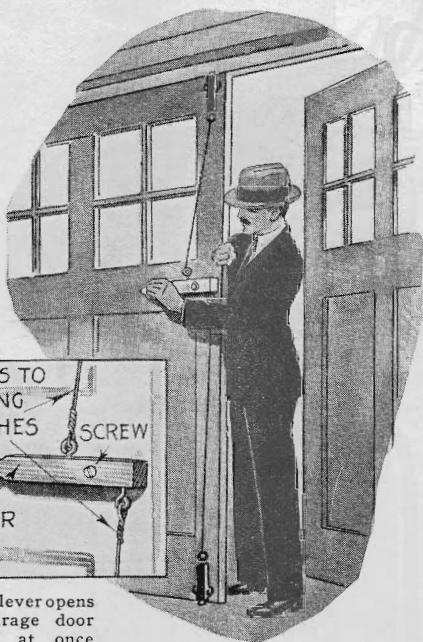
Short Cuts for Car Owners

*Clever Ideas Contributed
by Our Readers Will Make
Many Hard Auto Jobs Easy*

GARAGE doors having independent floor and ceiling catches can be opened with one hand if they are equipped with the simple lever arrangement illustrated. The handle, which can be shaped from a $\frac{3}{4}$ by 2 by 12 in. piece of wood, is pivoted on a heavy screw driven into the door and is connected by means of strong wires to the two bolt catches. The hole for the pivot should be drilled slightly larger than the screw. A downward pull of the conveniently placed lever releases both bolts simultaneously and eliminates all the "reaching up and stooping down" that is generally necessary to disengage the separate catches.—E. H.

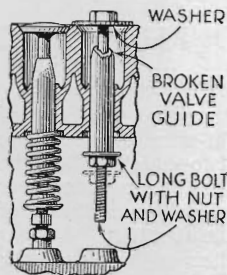


Simple lever opens two garage door catches at once



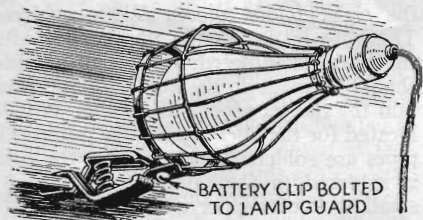
Broken Valve Guide

NOW and then when doing a valve job on a car, a valve guide will break off a short distance below the top. On cars having the particular valve arrangement shown, the portion that remains in the engine block can be removed with a bolt, nut, and two washers. The bolt, with a washer larger than the valve opening under its head, is dropped down through the guide. Then the second washer is slipped over the lower end of the bolt and the nut screwed into place. Tightening the nut slowly forces the valve guide upward so that it can be removed easily with the fingers.—J. M.



Bolt, nut, and washers used to remove broken valve guide

Battery Clip Improves Your Extension Light

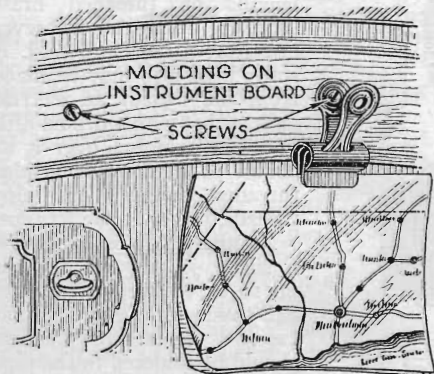


Battery connection clip attached to the top of the wire guard on an extension light, enables you to fasten the lamp at any angle

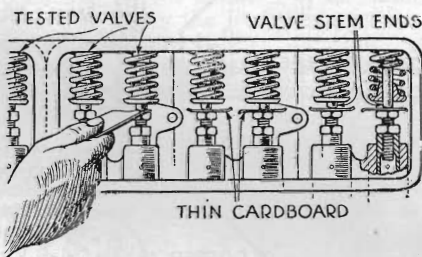
WHEN working under a car, a good extension light is an indispensable part of the repair kit. In most cases, the bulb is fitted with a wire guard having a convenient hook for suspending the lamp from convenient projections. A lamp of this type while handy, can be greatly improved, however, by the addition of an ordinary battery connection clip. The clip is attached to the top of the wire guard and makes it possible to fasten the lamp anywhere and at any angle that you may desire.—E. L.

Keeps Map in Sight

A SPRING paper clip fastened to the dashboard forms a convenient holder for maps or shopping lists. Remove one of the dashboard or dashboard molding screws, slip it through one loop of the paper clip, and screw it back into place. Being small, the clip will not be noticed when it is not in use. Doctors and salesmen will find it a convenient way to keep their calling list in sight for easy reference.—W. A.



Clip fastened to dashboard will hold road map



Finding Valve Tap

HIT or miss judgment in locating a valve tap can be replaced by a simple test made with squares of thin cardboard. Cut the covers from several paper match books into one-inch squares and slip one square between each valve stem and its corresponding tappet or arm. Then start the motor and allow it to run at idling speed. With the cardboard squares in place, the valves will be comparatively quiet. By removing the squares one at a time, however, a poorly adjusted valve will soon reveal itself by its tell-tale tap. When a noisy valve is detected, it should be adjusted before the next one is tested. Any noise present when the cardboard is removed from under a tappet can then be credited to that particular valve.—E. M.

Running Board Repair

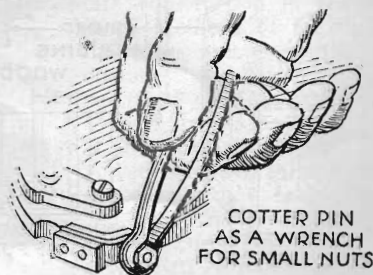
MANY cars are now provided with sturdy metal running boards covered with rubber matting. If for some reason, the rubber becomes cut, ripped, or worn a complete replacement is usually in order.



However, a good repair can be made with tire cut filling compound. The damaged spot is first scraped and then washed with gasoline. When it is clean, a thick coat of the rubbery paste is applied. Since compounds of this type tend to shrink slightly several applications may be required to make the patch.—C. M.

Cotter Pin Wrench

HAVING no wrench suitable for the small nuts found on many distributors, the amateur mechanic will find that a large cotter pin can be made to serve the purpose. By spreading the legs of the cotter pin, the eye can be slipped over the sides of the nut. Pressing the legs together will contract the eye and grip the nut, allowing easy adjustment.—R. A.



By spreading the legs of a cotter pin, its head can be used to unscrew distributor nuts

A Kit of Ideas for MOTORISTS

Useful Hints for Emergency Car
Work Contributed by Our Readers



A tool that aids in the removal of a rear axle can be quickly put together with an iron rod, a section of pipe, and two regular axle nuts

Homemade Tool Aid In Removing Axle

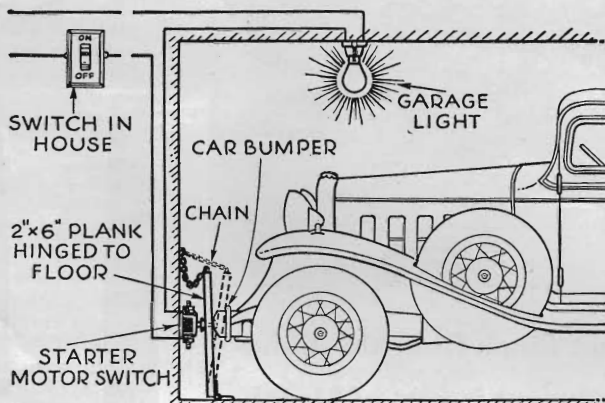
REAR axles that are to be removed can be loosened with a tool made from a twenty inch length of iron rod, a twelve-inch section of pipe large enough to fit over the rod, and two axle nuts. The rod should be the same diameter as the threaded end of the axle. One nut, which matches the axle, is screwed half-



way on one end of the rod and is welded as indicated in the drawing. The pipe is then slipped on the rod and the second nut screwed in place. By means of the free threads on the welded nut, the tool is screwed on the threaded portion of the axle. Bumping the pipe against the outer nut drives the axle loose.—B. A.

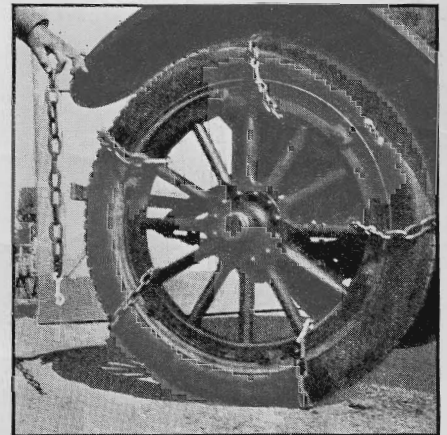
Board in Garage Turns on Light

A DISCARDED automobile starter motor switch can be rigged to form an automatic control for the garage lights. As shown in the illustration, the switch is fastened to the rear wall of the garage on a level with the axles of the car. A board, two inches thick, six inches wide, and three or four feet long is hinged at its bottom in such a way that its upper end comes in contact with the switch button when it is pushed up against the wall. The upper end of the board should be supported with a short length of chain. When the car is driven into the garage, the bumper pushes against the board and operates the switch, turning on the lights. The hand brake is then set to hold the car in



Drawings shows how starter motor switch, a board, and a piece of chain can be used to make an automatic garage light switch

this position. Another switch in the house turns the lights out. With the car in place, the lights likewise can be turned on. When the car backs from the hanging board, the lights will be turned off.—W. R. W.

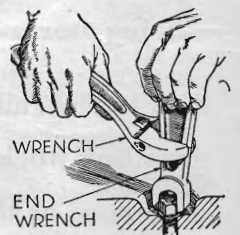


An Easy Way to Make Your Own Mud Chains

EASILY adjusted mud chains can be assembled from scrap pieces of chain and double-ended snap fasteners. Each mud chain consists of a piece of chain long enough to fit snugly around the tire and the wheel rim. The loop end of the snap clamps to the link at one end of the chain. To apply the chains, the snap end of the fastener is hooked into the other end of the chain.—K. C. M.

Handy Socket Wrench

YOU can tighten a bolt that requires a socket wrench by using an end wrench and an adjustable wrench. Fit an end wrench over the head of the bolt in a vertical position. The adjustable wrench is used to supply the necessary leverage as shown. It is best to place it close to the head of the end wrench to reduce the twisting movement on the handle of the end wrench.—C. R. W., Jr.

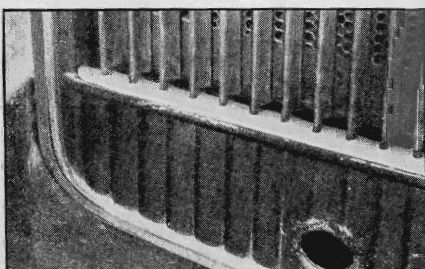


Leather Ends Radiator Rattle

RADIATOR shutters of the permanent type often become worn and noisy. To remedy this I devised the leather supporting strip shown in the illustrations.



This fits over the edges of the shutter blades at the bottom of the radiator front. The strip was made from a piece of leather belting, about one and one half inch wide. First, I marked the locations of the shutter blades on the strip. Then I drilled holes at each mark and cut narrow slits to the edge. The anti-rattler slips in place as shown.—J. G. P.



Ingenious Ideas for Motorists

Our Readers Give You Many Suggestions
for Adding Conveniences to Your Car

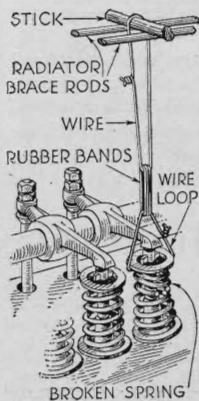


Holder made of radiator connection hose is attached to steering column and keeps your flashlight always handy

IN a holder that attaches to the steering column of your car, you can keep your flashlight within easy reach. The inexpensive holder illustrated is made from an 8 in. length of $1\frac{7}{8}$ in. radiator connection hose by plugging the lower end with a cork or suitable wood disk. The plug is held in place with glue and brads driven through the rubber fabric of the hose. Being soft, this holder will protect the flashlight from damage and there will be no metal to rattle. Two ordinary hose clamps are used to fasten the holder in place. If desired, the attachment can be enameled.—W. A. J. H.

Substitute Valve Spring

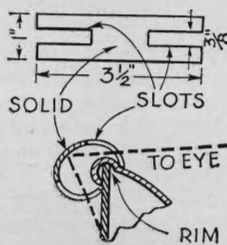
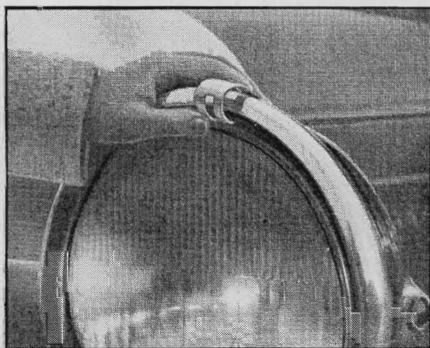
WHEN a valve spring on your overhead engine breaks, you can make an emergency repair that will get you to a service station quietly by using the simple arrangement shown. A piece of wire is made into a sling and looped under the washer on the valve stem. Then, several strong rubber bands are fastened to the upper end of the wire, and wired to a stout stick placed across the radiator brace rods.—E. C. W.



When Lamp Burns Out

STRIPS of tin, bent to fit on the rim of each headlight, serve as inexpensive indicators to warn the driver if one of his lamps burn out. Through the middle of a piece of tin, 1 in. wide and $3\frac{1}{2}$ in. long,

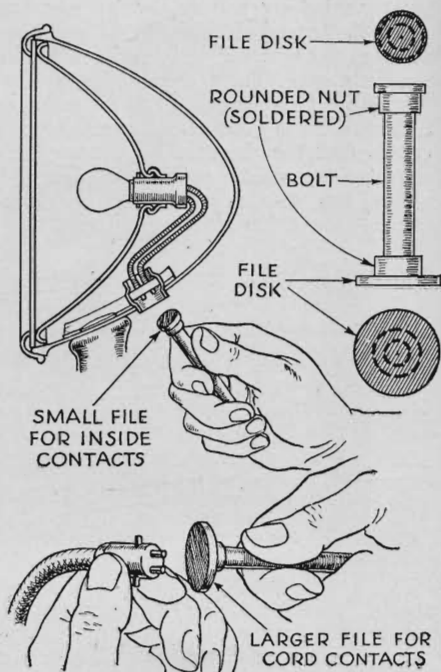
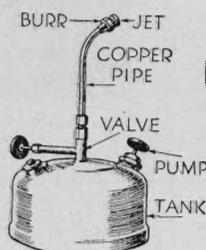
cut two $\frac{3}{8}$ in. slots as indicated. This will form a center section about $\frac{3}{4}$ in. long. Then bend the tin so that it fits snugly over the headlight rim at the top. When the strip is properly adjusted, it will catch a part of the headlight beam and reflect it back to the driver as a telltale. To improve the indicator, polish the inside surface of the tin with sandpaper or mineral wool. Of course, one indicator should be installed on each head lamp. Similar indicators, made about half the size shown, also can be fitted to the small fender lights or cowl lamps for city driving.—L. M.



A strip of tin, bent to fit over rim at top of headlight, will reflect point of light and show if bulb is burned out. At left, diagram showing how tin is bent and attached to lamp rim

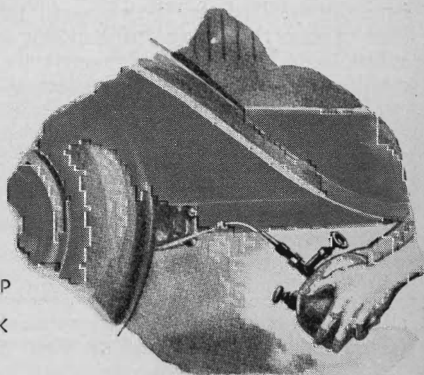
Pressure Oiler for Car's Springs

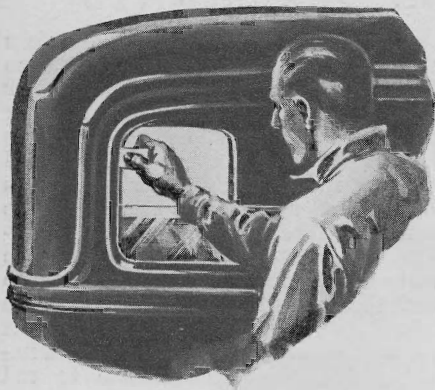
FROM the base and valve of an old gasoline lantern, the amateur mechanic can make a pressure oiler for springs. Filled with spring oil and pumped up to obtain pressure, the oiler takes the place of the old paint brush and pail of waste engine oil that many car owners use. A short length of copper pipe is first fitted with a burr or nut and the jet from a discarded carburetor screwed in. The pipe is then bent over as shown and fastened to the lantern base just above the valve. Being removable, the carburetor jet can be cleaned when necessary. In use, fill the tank with spring oil, operate the



Small Cleaning Tool

A TOOL for cleaning the contacts on headlights can be made from two disks cut from a discarded file and a $\frac{1}{4}$ by $1\frac{3}{4}$ in. bolt and nut. The nut is first soldered permanently in place on the end of the bolt and then, as shown in the drawing, the bolt head and nut are rounded and the two file disks soldered in place. The smaller disk, $1\frac{1}{2}$ in. in diameter, can be inserted in the headlight socket and rotated to clean the inside contacts. The larger disk $\frac{9}{16}$ in. in diameter, serves for cleaning the terminals on the lamp connection plug. The tool can be kept in the side pocket of your car.—E. D. T.



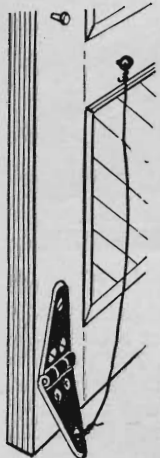


Useful Kinks for CAR OWNERS

Our Readers Supply Valuable Hints
for All Who Work on Automobiles

IN RAINY weather or just after the car has been washed, closed-car window glasses often tend to stick and bind in the felt sash channels. This can be overcome by lowering the windows and greasing the guides with a small wedge shaved from a bar of white soap. The pointed end of the soap wedge is placed in the felt raceway and given a few strokes up and down, the full length of the channels. Unlike grease or oil, the white soap will not discolor or rot the felt.—A. J. H.

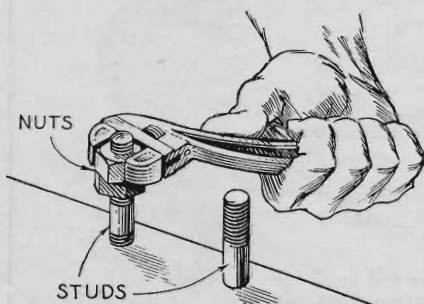
Hinges for Door Stops



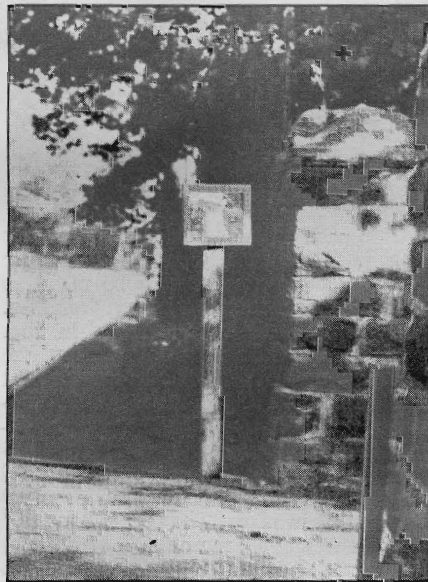
ORDINARY strap hinges can be used as cheap and efficient stops for swinging garage doors. As shown in the drawing, the hinge is placed so that the short leaf drops far enough below the lower edge of the door to catch in the ground or surface of the driveway. The flexible wire lift serves to hold the hinge leaf out of the way when it is not in use and also permits lowering the stop without reaching or stooping.—K. C.

To Remove Studs

BY LOCKING two nuts on a stud, you can replace it or remove it easily with an ordinary wrench. First, screw two nuts on the stud and lock them, one against the other, by using two wrenches. Then turn the lower nut to remove the stud or the upper nut in the reverse direction to replace it. One nut serves as a locking nut for the other in both operations. To remove the nuts, simply unlock them by placing a wrench on each and turning them in opposite directions.—H. F.

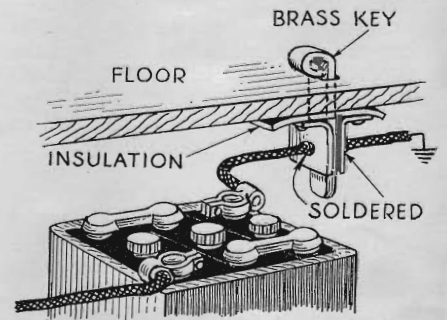


By placing a wrench on one of two nuts locked together, studs can be removed or replaced



Mirror Reduces Danger

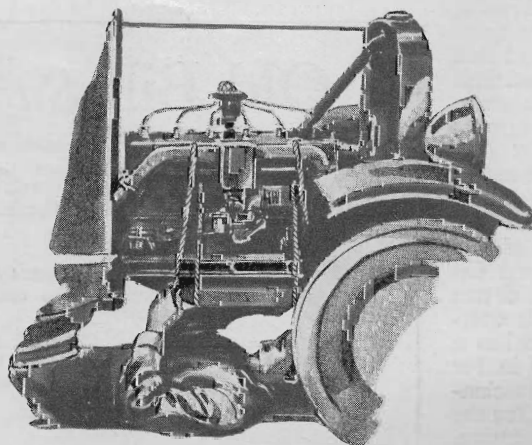
A MEDIUM-SIZED mirror, mounted on a pole outside of a blind driveway and adjusted to reflect the main road, is good insurance against accidents. When carefully adjusted, the mirror will give the driver of a car leaving the driveway a full view of the blind road in spite of fences, trees, and bushes that otherwise obstruct the view. If the drive enters the road at right angles, a mirror can be placed on each side. When a car reaches a certain point on the drive, a quick glance at each mirror will tell the driver the condition of the traffic in both directions.—G. E. K.



Hidden Lock in Car to Thwart Thieves

AS AN added protection against thieves, you can equip your car with the simple hidden lock as shown above. The lock consists of a short strip of brass that completes the battery ground connection when it is pushed through a small rectangular hole in the floor boards under the driver's seat. Cut the ground cable in two and solder a one inch square of sheet copper to each end. These terminals are then fastened in place under the floor boards on each side of the key hole. A piece of inner tube should be used to insulate the terminals from the floor board. When the key is in place the ground circuit is complete but when the key is withdrawn no power can be obtained from the battery. While the metal contacts under the floor boards should be sufficient springy to grip the key tightly, they should not touch when the key is removed. Of course, this switch will control the entire electrical system, including lights.—R. S.

Putting a Crankcase Back in Place

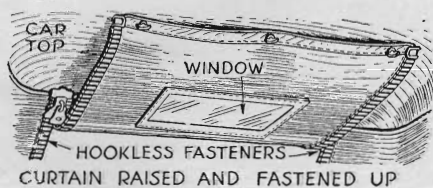
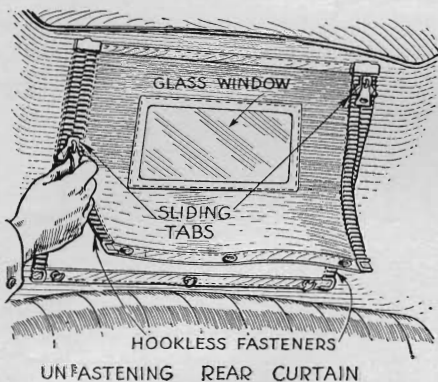


THE JOB of putting a heavy crankcase back into place can be made a simple one-man affair by rigging a length of rope as shown at the left. One end of the rope is fastened to the frame of the car on one side and then placed under the crankcase. The other end is looped over the manifold on the opposite side of the engine and provides a simple pulley arrangement for lifting the crankcase. One hand can be used to pull the rope while the other is free to start the bolts. If the crankcase is long, two ropes can be used, one being placed at each end.—W. H.

The Month's Best AUTO IDEAS

*Hints, Useful to Car Workers,
Are Supplied by Our Readers*

REAR window flaps on coupes and convertible roadsters can be made draft proof and rainproof by applying strips of hookless fasteners to the side joints. Ordinarily, the rear flap is provided only with three hooks along its bottom edge. As shown in the illustration below, the hookless fasteners, which can be purchased new or salvaged from old pieces of clothing, hand luggage, and so on, are stitched to the sides of the flap and the edges of the car top. Merely pulling the sliding tabs up or down opens or closes the flap. Obviously, the fasteners should be sewed in place so the open end is at the bottom. The hookless fastener strips can be stitched with carpet linen threaded in a sailmaker's needle.—C. F.

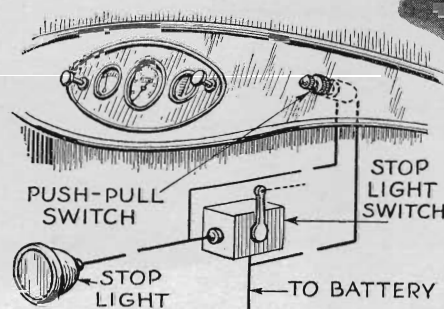


Hookless fasteners, stitched to the side of window flaps, will make your roadster rainproof

New Backing Light

BY CONNECTING a push-pull switch across the stop-light switch terminals, you can use your stop light also as a backing light. In the closed position, the push-pull switch completes the stop-light circuit independent of the brake pedal and allows the light to be used when backing. When the switch is open, however, it does not interfere with the regular operation of the stop light by the brake pedal. To increase the illumination of the light, use a twenty-one-candlepower bulb in place of the usual type found in stop lights. The writer installed the supplementary switch on the dashboard, where it is handy for

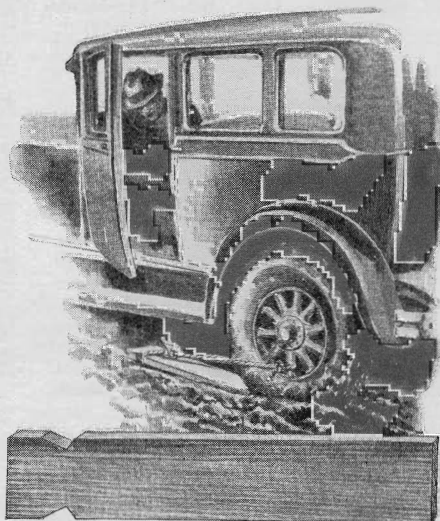
immediate use when a light is needed in backing at night on a dark road.—H. M. J.



A push-pull switch connected, as shown, across stop light terminals will give a backing light

Getting Your Car Out of Mud

WHEN a rear wheel rests in the mud, a plank and some stout rope or a chain used in the manner illustrated will provide the necessary traction. Place the plank as far under the mired wheel as you can get it, tie the rope or chain to the outer end, and fasten the other end of the rope to the lowermost spoke of the wheel. Then start the motor, shift into low gear, and engage the clutch slowly. The wheel in turning will pull itself along the plank for one quarter of a revolution. By taking up the slack in the rope after each try, the car can be made to pull itself out of a mud hole in a very short time.—O. G.



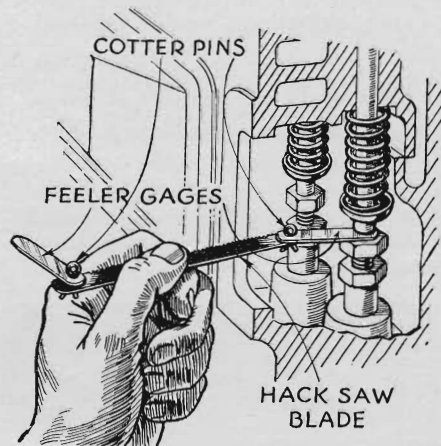
A plank and a piece of rope can be used, as shown, to free a car when wheels are in mud



On piece of wall board, nailed up in garage, pages of auto kinks are pasted for reference

Auto Kink File

RATHER than lose the valuable kinks published each month in *POPULAR SCIENCE MONTHLY*, I now clip out the page and glue it to a board fastened to the wall of my garage. The board is merely a piece of wall board nailed to the studs. When I am working on my car and get stuck I glance over my work sheets and find the answer to my problem. I have also added a directory of of service stations.—D. G. R.

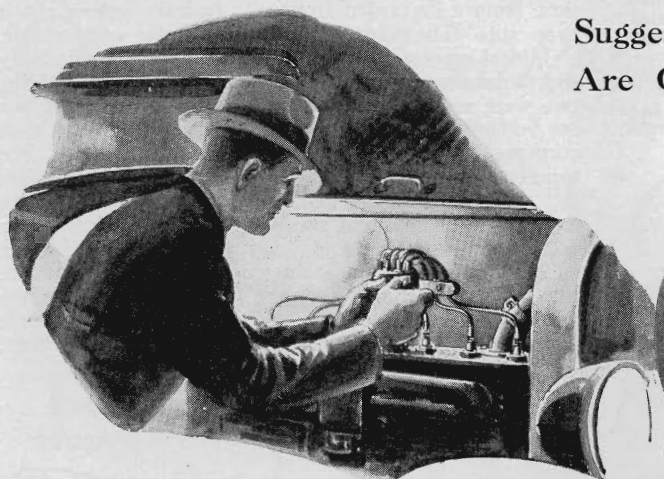


Using Feeler Gages

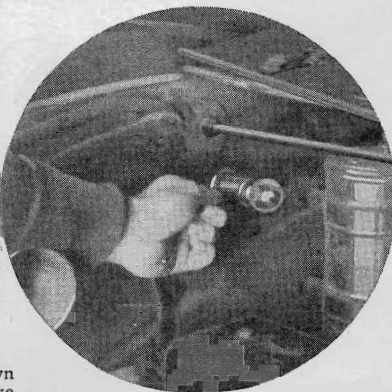
WHEN adjusting the valves on a car, the shortness of the feeler gages often causes undue fuss and aggravation. The work must be done in cramped quarters and the short gage strips are difficult to handle. To overcome this, the writer removed the exhaust and intake valve feeler leaves from the gage case and fastened them to the ends of an old hack saw blade as shown. Both gages are always ready for use and the saw blade serves as a handle.—B. W.

Handy Hints for Motorists

Suggestions Valuable to All Car Drivers
Are Contributed by Experienced Readers



By installing a lamp fixture on the front of the dashboard, as shown in the circle, a light is provided for your work as indicated above



ALTHOUGH a flashlight is a convenient accessory when making emergency motor repairs or checking the oil at night, it is generally not in the car when most needed. However, the amateur mechanic can provide a convenient motor light by installing an ordinary dashboard lamp fixture on the front surface of the dash or motor compartment cowl. The dashboard fixture should be of the older type having a built-in switch. These can be purchased cheaply from auto parts dealers or can be salvaged from old cars in an auto graveyard. The metal dash or cowl forms the ground and the second wire is connected to the ammeter. By removing the glare shield from the fixture you can fit it with a headlight bulb.—L. VAN T.

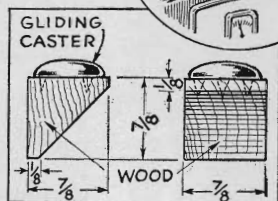
Reflects Traffic Light

OVERHEAD traffic lights, cut from view by the top of your car when you head the line at an intersection, can be made visible by a simple windshield reflector made from a block of wood and a highly polished, nickel-plated, steel furniture leg glide. As shown in the illustration, the glide or caster is driven into the top of a triangular block of wood. To avoid splitting the wood, it is best to drive the glide before cut-

ting the block to shape. Glue the wood block close to the bottom edge of the windshield and in such a position that the dome-shaped surface of the glide is seen easily from the driver's seat. When properly placed, the curved glide will reflect the overhead lights.—L. C. P.

Speed Governor

PERMANENT harm can be done a new car by driving it at excessive speeds during the first 2,000 miles. A short length of one-half inch pipe can be made to serve as a simple speed governor during this period. The foot knob on the accelerator is first removed, the short pipe



Drawing shows how caster is set to reflect overhead light

slipped over the rod, and the knob screwed back into place. The pipe or sleeve then prevents the accelerator from being pushed down below a certain point according to the

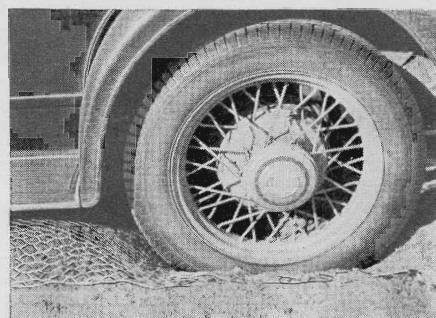
maximum speed recommended. Cut the pipe approximately to length and then add thin washers to obtain the final speed adjustment. You can judge the approximate length of the

pipe by pressing down the accelerator until the highest speed at which the new car should be driven is obtained. Then note the distance between the underside of the accelerator foot knob and the floor boards and cut the pipe to fit. This simple device also would prove of genuine use when the inexperienced person first starts driving as it would prevent sudden jerks.—F. X. P., Jr.

Wire Netting for Sand

FOR the summer motorist who intends to travel off the paved highways at the seashore, a four-foot strip of chicken wire netting will prove a useful addition

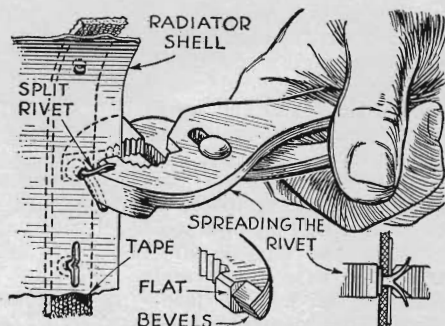
to the tool kit. If the car gets stuck in the sand, it is necessary only to slip the strip of netting under the wheel and apply the power. The wheel resting in the sand will climb right out of the hole without the usual spinning and strain on the drive shaft. The same strip of netting can be carried during the rest of the year for use in case the car gets stuck in the mud. Being flexible, the netting can be rolled into a small bundle and stored under the seat.—K. F.



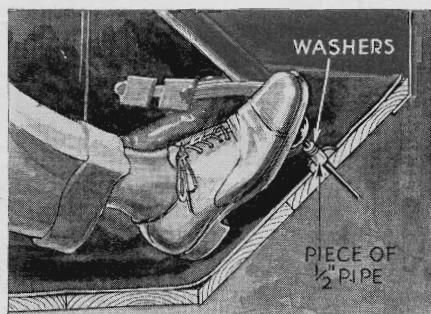
Wire netting carried in tool box is helpful if used as shown, when car gets stuck in sand

Rivet Pliers

WHEN replacing small split rivets, it is often difficult to fasten them with ordinary tools. This is especially so when it is necessary to renew the rivets that hold the canvas lacing to the radiator shell and cowl of an automobile. By reshaping the tip of an inexpensive pair of slip joint pliers, however, you can make a special split rivet tool. On an emery wheel, regrind one jaw to a beveled point for a distance of 1/4 in. back from the tip. Directly behind this angle, also slightly bevel the sharp edges of the flat jaw. The V-shaped tip is used for the splitting operation while the beveled flat portion at the rear serves for squeezing the rivet flat.—W. H. A.



Drawing of slip joint pliers reshaped for use as a special split rivet tool for emergencies



A piece of half-inch pipe, set beneath the accelerator, keeps car within permitted speed

*Test
of W*

An ordinary jack can be used, as illustrated, to spread the rim of a heavy tire. The base of the jack is placed against a block of wood and the rim closed for locking

WHEN you have trouble spreading a stubborn rim on a heavy tire, you can call on your regular jack to do the job. Place a 1 ft. long "two by four" or similar block of wood across the inside of the rim opposite the split joint. Then, set the base of your tire jack on the block so its upper end bears against the inner lap of the joint. Operating the jack to raise the head will spread the rim and push the stubborn lap into place.—J. B., Jr.

of a cell or tube where gravity will not carry the mending liquid into the opening. To overcome this difficulty, the writer connects one end of a length of rubber tube to the windshield wiper connection on the manifold and the other end to the overflow pipe on the radiator. By idling the motor, the manifold suction is used to draw the cement up into place. When a motor is idling, however, the manifold vacuum is likely to be severe so the radiator cap is removed and one hand is placed over the filler opening. By lifting and replacing the hand, the suction in the radiator can be controlled quickly. The cement is applied with a small swab held in the other hand.—E. T. G.

NOISES in an open car caused by a loose windshield can be cured with the simple anti-rattle clips shown. Two 2½-in. lengths of stiff wire are covered with flexible rubber tubing of the windshield wiper connection type and bent U-shape to fit the windshield frame. One clip is placed over the metal frame at each side of the windshield. Although the dimensions given are for a small car, sizes vary only slightly for larger models.—R. F.

ANTI-RATTLER

3 1/4"

2 1/2"

WIRE

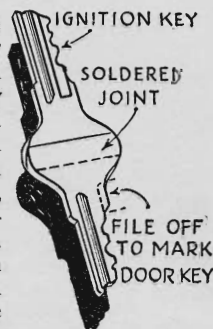
RUBBER TUBING

U-shaped pieces of wire, covered with rubber, can be used to stop the rattle of windshield



U-shaped pieces of wire, covered with rubber, can be used to stop the rattle of windshield

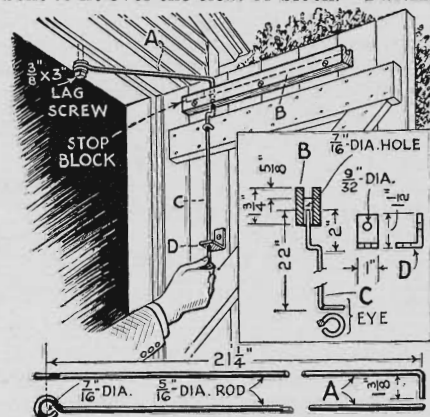
IF TWO keys are required for your closed car, you can simplify matters by combining them. Cut off one-third of each key head, bevel them for about 3/16-in., and solder them together as shown. Then, so the keys can be identified easily in the dark, file off the shoulders on the door key.—H. W. S.



A WIPER for the oil gage rod on your car can be made by gluing pieces of thin felt to the inner sides of the ends of a spring clothespin. The wiper then can be placed close to the oil gage rod hole by clamping its jaws on any convenient edge of metal.—L. G. P.

STRONG, professional-looking stops for swinging garage doors can be made from scrap pieces of wood and about 8 ft. of iron rod. The materials purchased here should not cost more than fifty cents. The sliding arm, guide rail, and release rod are assembled as shown in the drawing. As the door is opened, the arm A swings out as its free end follows along the groove in guide rail B. When it reaches the stop block at the inner end of the groove, it slips into a hole and is held fast. To close the door, the release rod C is pushed up. This raises the end of arm A out of the hole and allows it to slide forward. By placing the guide rail hole 1 ft. from the inner edge of the door and the pivot point of arm A 1 ft. from the door jamb, the door will be held in a position a little more than wide open. If the door has no cleat located below the guiderail a $\frac{3}{4}$ by 2 by 2-in. block can

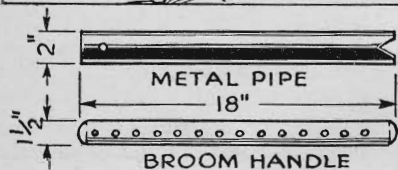
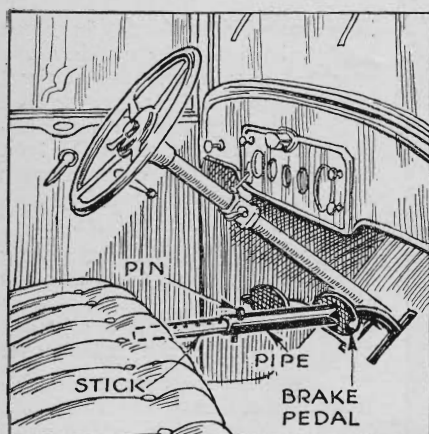
be screwed to the door to serve as a stop for the release rod. The rod C should be bent to fit over the cleat or block.—P.E.K.



73

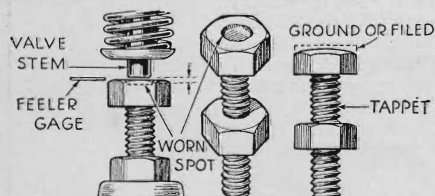
Helpful Hints *for* Motorists

Practical Suggestions for Doing Car Jobs Submitted by Interested Readers



Homemade Brake Stick

WHEN adjusting brakes you will often find it necessary to depress the brake pedal to some particular position. This is an easy one-man job if you use a simple improvised brake stick made from a scrap piece of pipe and the handle from an old broom. The broomstick should be an easy sliding fit in the pipe. Drill a hole $\frac{1}{4}$ in. in diameter in one end of the pipe, as shown, and a series of $\frac{1}{4}$ in. holes spaced about 1 in. apart along the full length of the 18 in. section of broom handle. Then a small nail or cotter pin slipped through matching holes will allow you to adjust the telescoping rods to any desired length. In use, the brake stick is set to the desired length and wedged between the front seat and the brake pedal. A V-notch cut in the end of the pipe will prevent the stick from slipping on the surface of the brake pedal. A rubber cane tip will serve as a nonskid cap for the end of the broom handle. When not in use, the stick can be completely telescoped and stored in your repair kit.—J. H.



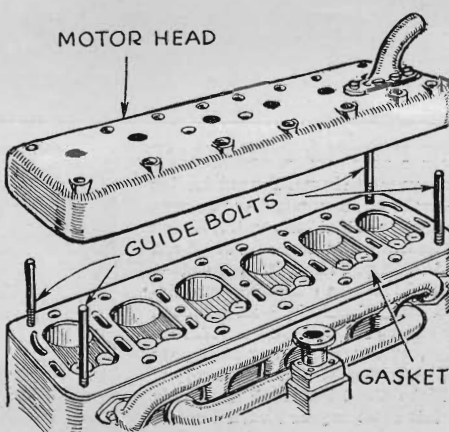
Grinding Tappets

WHEN car valves cause trouble even after careful adjustment, the difficulty generally can be traced to the top surfaces of the valve tappets. With continued use, the tappets wear away and a small pit or depression is formed where

they come in contact with the ends of the valve stems. This recess makes it impossible to adjust the valves accurately since the feeler gage will not show the actual clearance between stems and tappets. To remedy this, remove the tappets and grind or file out the pits, making the top surfaces slightly dome-shaped. With the valve stem resting on a flat surface, accurate adjustment can be made easily.—D. J.

Replacing Motor Head

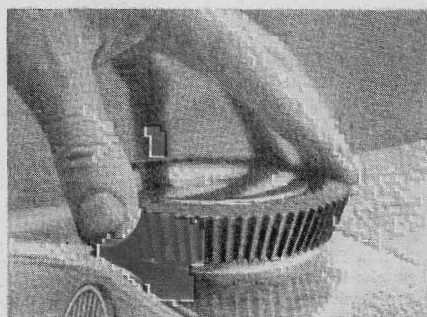
IN REPLACING a cylinder head, it is often difficult to center the gasket and the head. This trouble can be overcome, however, by cutting the heads from four old cylinder head bolts and using them as guides as shown below. The headless bolts are screwed loosely in place and the gasket and head placed over them. The guide bolts then can be removed.—C. C., Jr.



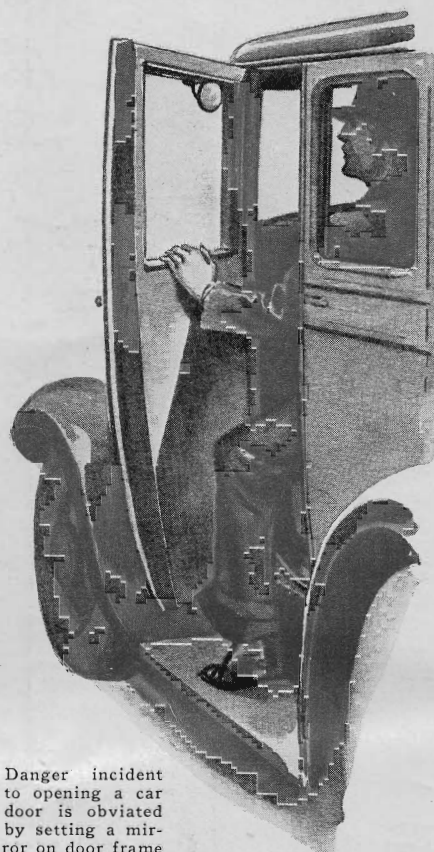
Bolts from old cylinder head are used as guides in centering gasket and cylinder head

Radiator Cap Grip

A SOFT rubber fruit jar cover remover forms an excellent heat-proof grip for a radiator cap. Simply force it in place and leave it there. It is neat in appearance, affords a cool grip, and protects the metal cap should it accidentally be dropped on a concrete road or hard-surfaced garage floor.—F. W. B., Jr.



Rubber, used in removing fruit jar cover, is slipped over radiator cap to give cool grip

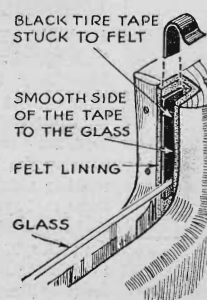


Safety Mirror on Door

OPENING the car door next to the driver is risky business, especially on a crowded road. However, you can guard yourself and your car against possible injury by installing a small mirror on the upper edge of the window frame. Solder a small pocket mirror to a piece of fairly heavy wire attached to the frame by looping it around one of the window frame screws. The wire then can be bent to hold the mirror at the right angle. The mirror should be adjusted so that it gives a clear view of the road parallel to the car when the door is opened six or eight inches. Sometimes it is possible also to arrange the mirror to give a valuable oblique view through the rear window.—W. E. B.

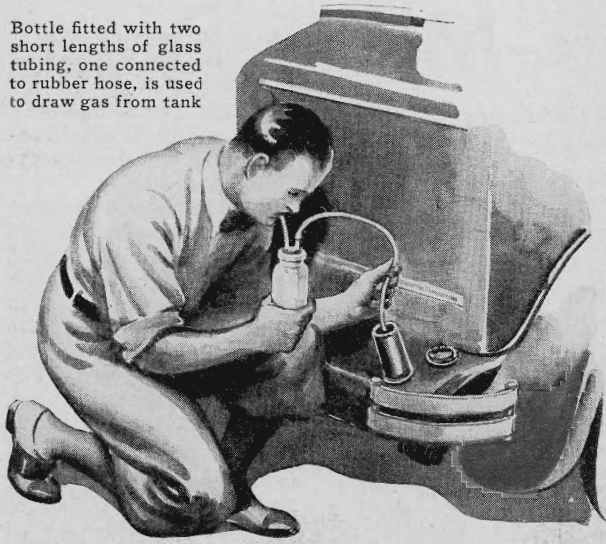
For Silent Windows

ANNOYING window rattles caused by worn-out felt guide-strips can be stopped with a few lengths of ordinary friction tape. With the windows down as far as you can get them, force the tape against each side of the guides in the manner shown, the smooth side to the glass. The tape will serve as a soft liner to build up the flattened guides and hold the glass firmly in place in the grooves.—M. L. W.



Useful Kinks for Your Car

Bottle fitted with two short lengths of glass tubing, one connected to rubber hose, is used to draw gas from tank

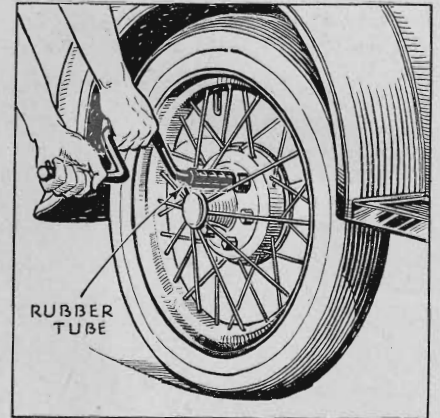


SOME arrangement for syphoning fuel from the gas tank is, without doubt, an important part of a car's repair kit. If you carry a short length of rubber tubing for this purpose, you can eliminate

Suggestions Valuable to All Drivers
Contributed by Our Ingenious Readers

any possibility of sucking the gas up into your mouth by adding the simple arrangement shown. Select a medium-sized bottle with a large mouth, and fit it with a rubber stopper containing two short lengths of glass tubing. To one tube, connect the length of rubber hose. The second tube is the suction outlet. To use the safety syphon, place the end of the rubber tube in the gas tank and suck momentarily on the other tube. The gas will flow into the bottle without the slightest possi-

bility of entering your mouth and once started, it will continue to flow when bottle is lowered. For larger quantities, tip the syphon bottle and allow the gas to flow into a larger container.—W. E. W.



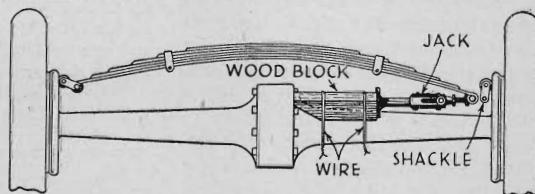
Protecting Wire Spokes

ON CARS equipped with wire wheels it is difficult to use the wheel wrench without scratching and marking the enamel on the spokes and hub, thereby not only disfiguring them but also opening the way to rust and permanent injury. To safeguard against this, you can pad your wrench with a short section of rubber garden hose cut spirally to fit on the first bend as shown in the illustration above. As a result, if the wrench slips, while in use, the rubber strikes the spokes and no damage is done. Although this kink is particularly suited for protecting the spokes on cars where the fastening bolts are located in back of the spokes, it is equally valuable in cases where the bolts are located inside a large sized hub. The rubber hose pad can be removed from the wrench when not in use.—E. J. N.

Tire Jack Resets Spring Shackles

WHEN repairing the rear spring or rear end of a Ford car, you may find it difficult to replace the spring shackles. By using your tire jack in the manner shown, however, you can do the job easily and quickly. First fasten the left-hand shackle in place on the spring. Then using wire or strong, small-diameter rope, secure a wood block to the upper side of the rear axle, butting its end against the side of the differential housing and place your jack against the outer end of the block so that its

head bears against the eye of the spring. Operating the jack will spread the spring into position and allow you to fasten the right-hand shackle.—E. E. S.

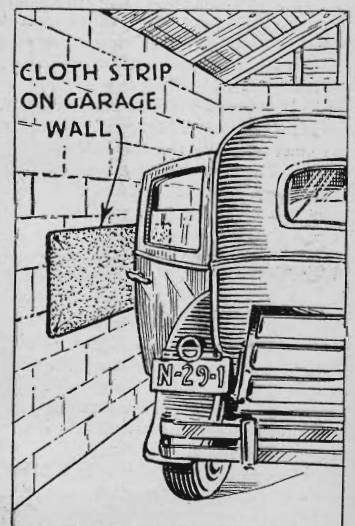


Tire jack, placed as shown against wood block and end of spring, helps fasten rear spring in shackle



Pads on Garage Walls Protect Car Doors

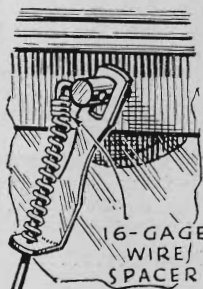
BY NAILING a pad of scrap velvet, heavy cloth, or thick rubber along each side wall of a narrow, one-car garage, the car owner can protect the nickel-plated handles on the car doors from injury. The length of the pads, of course, will depend on the variation in the position of the car.—H. P. B.



Pads of cloth or rubber fastened to garage walls protect car doors

Closing Rear Compartment

STRETCHING under the raised rear deck of a business coupe often results in a bumped head when the catch slips. In order to prevent this, I stapled a length of heavy cord to the wood frame inside the cover and ran the other end to the middle of the support bracket. Now, I can close the compartment easily and safely merely by pulling the cord to release the latch.—W. B. M.



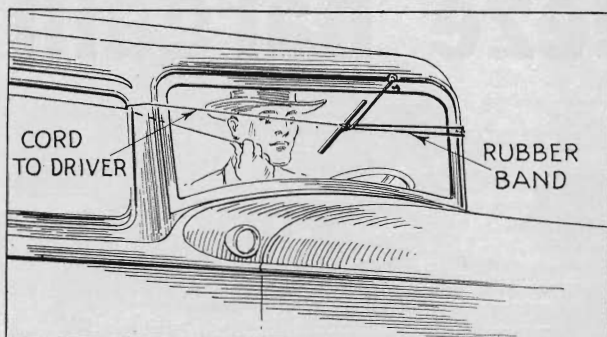
Wire wound around blade arm of windshield wiper, makes blade touch glass

Windshield Wiper Fixed with Wire

WHEN your windshield wiper fails to make contact with the glass, inspect the spring at the upper end of the blade. With continued use, it often loses its compression. This can be remedied easily by winding three or four turns of wire around the blade arm above the spring, forcing the spring together a small amount to increase the pressure.—R. J. W.

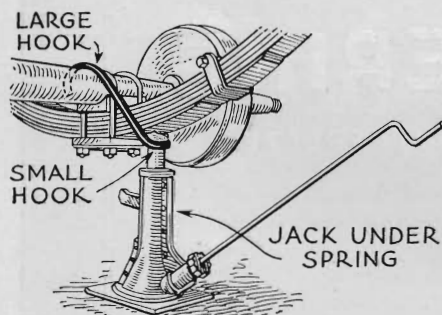
Useful Hints *for* Your Car

Our Readers Describe Simple Ways of Solving Many Common Motor Troubles



Handy Windshield Wiper

IF A storm comes up suddenly and your automatic windshield wiper fails to work, you can operate it temporarily with a piece of string and a rubber band. Simply fasten the elastic and the string to the wiper blade where it joins the moving arm. Then hook the rubber band over the top hinge of the front-left door and lead the string through the partially opened window of the opposite door. Pulling the string will move the wiper to the right while the elastic band will pull it to the left. It can be operated without interfering with driving.—F. J. S.



Holder for the Jack

ALTHOUGH it is often necessary to place a jack under the springs instead of the axle, especially on low-slung cars, they have been known to slip and cause serious injury. You can avoid this by using the simple safety stay rod shown in the illustration. The stay consists of a length of three-eighths-inch iron rod bent to form two hooks, a large one vertically and a smaller one horizontally. In use, the large loop is hooked over the axle while the smaller one grips the neck of the jack. Being linked to the axle, the jack can not slip backwards and drop the car. This small device, insuring safety and protecting your car is decidedly worth while making.—E. T. C., Jr.

Homemade Trouble Light

BY SALVAGING an old flash light and several feet of lamp cord I added a trouble

lamp to my car's repair kit. After removing the old batteries, I soldered the lamp cord ends to the two terminals inside the flash-light case and connected midget-battery clips to the two other ends. Then I bought a suction-cup coat hanger (any type of suction cup device will do), removed the rubber cup, and, by means of a rectangular slot cut in the flash-light

case and a sixteen penny nail, fastened the cup to the side of the case. Now I can have my trouble light where I want it. All I have to do is snap one

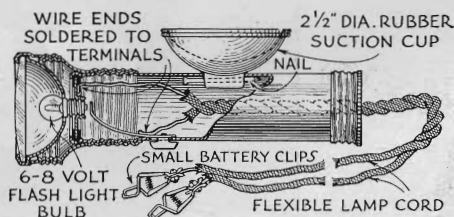
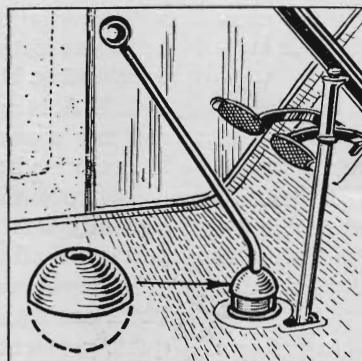


Diagram shows construction of trouble light

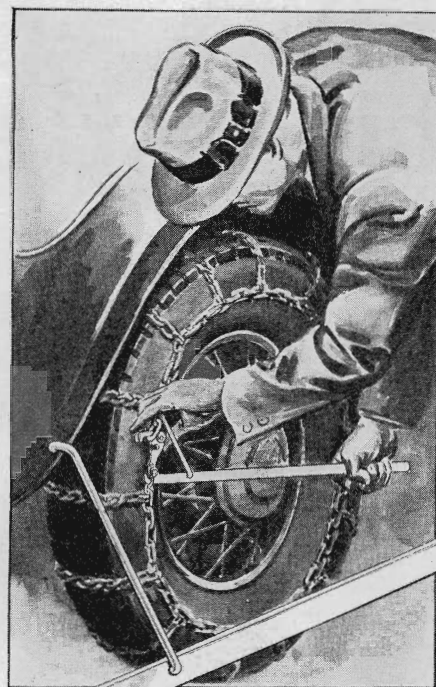
battery clip to the frame of my car and the other to any wire that has battery current in it. To place the light, it is simply a matter of a few seconds to push the suction cup against some smooth surface to make it stick and there I have my light convenient for use on a moment's notice and at a time when it is seriously needed.—W. B. M.

Protects You from Grease

AS A car gets older, the ball joint at the base of the gear shift lever often tends to ooze grease and grime. To protect your shoes and clothing, you can make a grease cover by placing half of a rubber ball over the lever joint. A hole cut in the top of the half ball will allow you to slip it over the shift rod and prevent the escape of grease.—F. M.



Half a rubber ball, with hole cut in it, is put over shift rod above lever joint



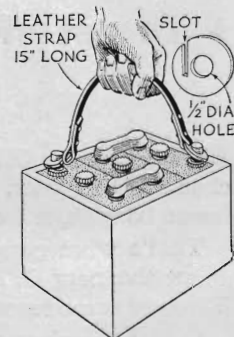
Strip of iron, notched at end, and with movable hook, is used to tighten chains

To Fasten Tire Chains

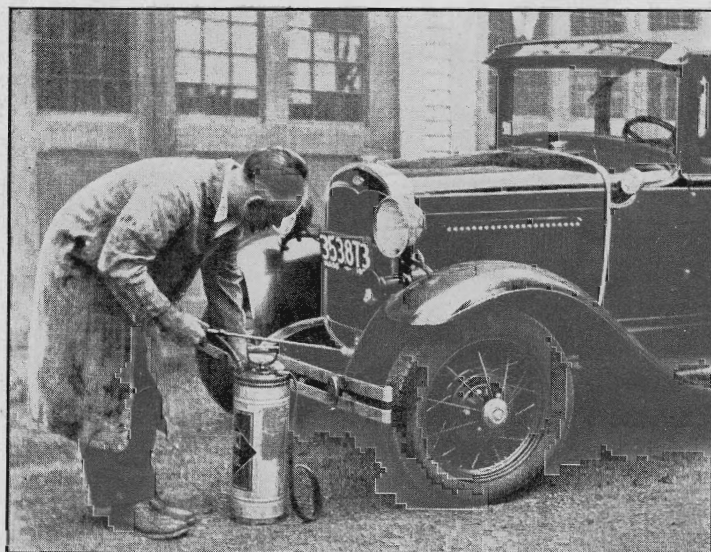
OF ALL cold weather jobs, that of fastening tight the tire chains is probably the most irksome. You can avoid the barked knuckles and numbed fingers usually associated with the task by making the chain fastener illustrated. The tool consists of a narrow strip of iron or steel, notched at one end, and furnished with a movable hook-shaped steel link. The inside border of the chain is fastened first and then the tool, placed as shown, is used to close the outer links. No matter how snug the chain, a slight downward pressure on the handle will draw the ends of the chain together.—K.S.

Handle for Battery

CARRYING automobile batteries is a back straining job unless a handle is used. The amateur mechanic can make a handle from two large washers and a fifteen-inch length of leather strap. Select two washers having one-half-inch diameter holes and, with a hack saw, cut a one-eighth-inch slot across the face of each. These slots will take the looped ends of the strap as shown in the drawing. To use the handle, simply drop a washer over each terminal of the battery and connect the strap. The weight of the battery will make the washers bind on the terminals and provide a vise-like grip.—D. D.



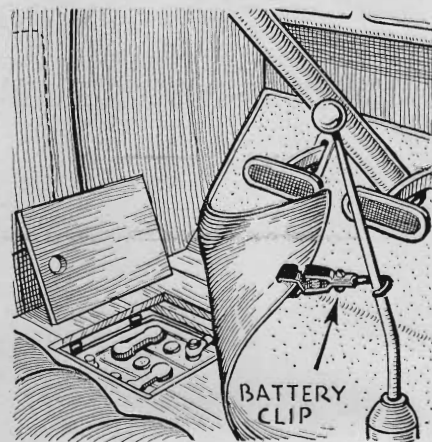
New Hints for Car Workers



Ideas That Save Time and Trouble In Repairing Autos Submitted by Our Readers

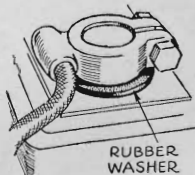
Pressure-type garden sprayer can be used, as shown, to shoot lubricant into all parts of car

A battery clip, arranged as shown, is useful in keeping the rubber floor covering out of the way when you work on battery



DURING the months when your pressure-type garden sprayer lies idle, you can put it to good use oiling your car's chassis and springs. Charged with a half-and-half mixture of crankcase drainings and kerosene it will form an excellent pressure oiler. Shooting the lubricant out in a fine spray, it will force the oil between even the tightest spring leaves and chassis parts. If your particular sprayer is fitted with a rubber sealing washer, replace it with one cut from leather as the oil soon will swell the rubber. Incidentally, putting the sprayer to this use will in no way injure it. As a matter of fact, the oil will tend to protect the tank from corrosion and rust during the fall and winter.—W. H.

Trick for Cable Clamps

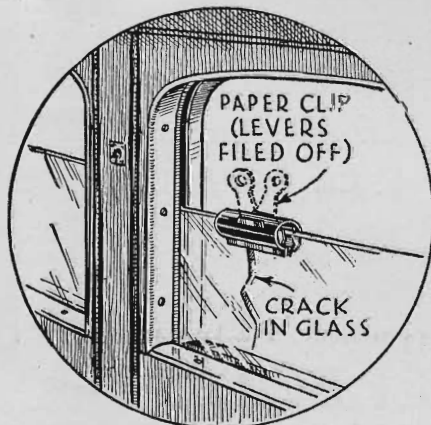


A rubber washer around terminal post keeps cable clamps from sticking

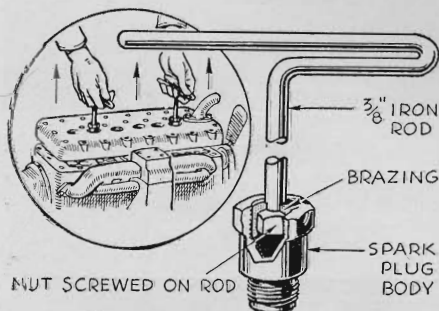
AFTER trying all sorts of tricks to prevent the cable clamps on batteries from sticking to the battery terminals, I hit on the following idea that seems to work better than all the rest: First I cleaned the clamps and terminals thoroughly. Then I selected a large rubber washer that was a tight fit for the terminal post, slipped it over the post, forcing it down next to the terminal base, and fastened the cable clamp in place on top of it. So far the clamp has remained clean.—E. J. N.

For a Cracked Window

IF THE window in your car's door cracks vertically, you can make a neat emergency repair by using a small paper clip of the steel-spring variety. Fasten the clip in place over the upper end of the crack as shown, shear off the two handles close to the spring, and file off any rough edges. The pressure of the clip will hold the broken edges together.—A. C.



Steel-spring paper clip comes in handy to repair, in an emergency, a window that is cracked



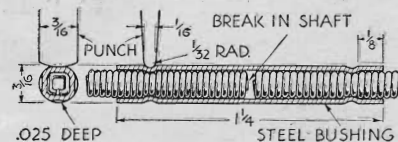
Removing Cylinder Head

THE job of removing cylinder heads can be made less of a physical task by improvising the simple handles shown in the illustration. Made by fastening fifteen-inch lengths of three-eighths-inch diameter iron rod to the bodies of discarded spark plugs, these sturdy handles can be screwed quickly into the motor head. First remove the porcelain from the spark plug. Thread one end of the rod to take a nut, insert the rod and the nut into the body of the plug, and braze over the top to hold the nut firmly in place. The outer end of the rod can be bent to form a convenient handle as suggested in the drawing.—E. W. B.

To Hold Floor Covering

WHEN you do work around a battery located under the floor boards, you will find a battery clip having a wire hook bolted to it a very useful tool. The rubber floor covering that always persists in getting in the way, can be held back merely by snapping the clip on one corner of the mat and looping the hook around the gear-shift lever or brake rod.—E. G.

Fixing Speedometer Shaft



A steel bushing, cut to fit snugly, makes a good repair job when speedometer shaft breaks

WHEN the shaft of your speedometer breaks, you can make a permanent repair by fastening the broken ends with a steel bushing or sleeve. If you can't find a piece of thin-walled steel tubing that will slip snugly over the shaft ends, drill a short piece of three-sixteenths-inch cold-rolled steel rod to be a tight fit. Insert the broken shaft ends into opposite ends of the bushing and, using a curved-tip punch, force the bushing wall into the shaft at four points about one-eighth-inch from each end to hold it in place and prevent it from twisting loose.—J. E. K.

Cold-Weather Washing

IN FREEZING weather, many car owners find it hard to wash their cars in the open without having the water freeze on the body. If you have a little radiator glycerine on hand, add two parts of it to every hundred parts of the water you use. It will prevent the water from freezing even when the temperature is very close to the zero mark.—J. L.